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Direct Approach to Instruction

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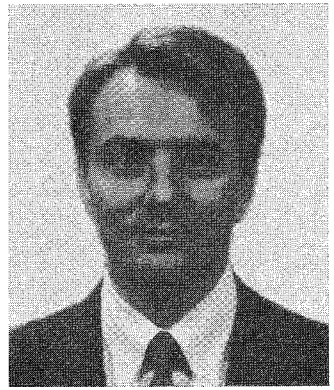

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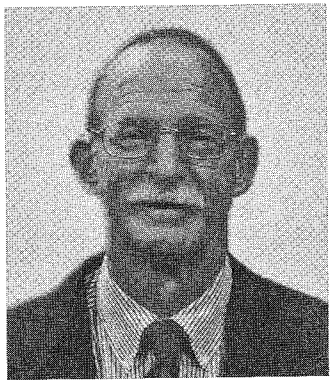

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EDITORS' FOREWORD

Preconditions *(when to use the theory)*

Content

- *Information, skills, understandings, higher-order thinking*

Learners

- *All K-12 students*

Learning environments

- *K-12 classrooms*
- *Trained teachers*

Instructional development constraints

- *Minimal, given the large amount of instruction already developed*

Values *(opinions about what is important)*

about ends *(learning goals)*

- *The importance of mastery of information, skills, understandings, and higher-order thinking*

about criteria *(for successful instruction)*

- *Efficiency: To maximize academic learning time (ALT) as measured by student success, coverage of content objectives, and time-on-task*

about means *(instructional methods)*

- *Variations in students' prerequisite skill levels may require variable time to allow all learners to achieve mastery or different goals/objectives for different learners. Learners may need to be grouped accordingly.*
- *Presentation of essential content should be active, generally as a step-by-step progression*

about power *(to make decisions about the previous three)*

- *The teacher should be in control*

Universal Methods

1. *Presentation phase involves five events: (a) review prior learning/skills; (b) state knowledge or skill to be learned; (c) state importance/relevance; (d) clearly explain knowledge or skill to be learned; and (e) provide multiple opportunities to demonstrate learners' initial understandings.*
2. *Practice phase involves three events: (a) practice under the guidance and supervision of a teacher; (b) practice under independent conditions; and (c) periodically review in order for learners to use their new knowledge and skills.*
3. *The assessment and evaluation phase involves two events: (a) collect daily data to judge student success; and (b) collect longitudinal data (weekly, bi-weekly, monthly).*
4. *The monitoring and feedback phase involves two events: (a) provide cues and prompts; and (b) provide corrective feedback and reinforcement.*

Situational Principles

- *Scripted lessons, colloquially thought of as DI, is a variation of direct instruction.*
- *Scripted lessons follow all the same basic phases and events in the general (universal) model, but differ in the specificity of the teacher statements and student responses.*
- *Scripted lessons do not provide as much new information in each lesson; instead, the new information is distributed among several lessons so that it represents only about 10 to 15% of a lesson.*
- *Concepts to be learned in scripted lessons are broken into logically arranged small pieces and follow a "question →answer" format.*
- *After scripted demonstration of initial understandings, students complete a workbook assignment individually or in small groups.*
- *Scripted instruction is fast-paced and repetitive, but can be tiresome to instructors and learners alike if continued for longer than about 20 minutes.*
- *Chained behaviors (math word problems, step-by-step procedures) are excellent candidates for scripted lessons.*

—CMR & ACC

DIRECT APPROACH TO INSTRUCTION

Defining quality instruction has been a goal of researchers from the beginning of formal schooling. Since the late 1960s, data have accumulated showing that students who receive high quality instruction demonstrate more successful school learning as measured on standardized tests of basic skills than students who do not (Joyce, Weil, & Calhoun, 2003). While there is a consensus that student learning is important, as well as a recognition that a teacher's classroom behavior is related to that learning (Darling-Hammond, 2000), a major problem arises when the quality of instruction (the "how" of teaching) is discussed outside the context of specific educational objectives or desired educational outcomes and the processes and instruments used to measure learning (the "what" of teaching). That is, decisions regarding curriculum objectives, the form and instrumentation of assessment, and the standards used for evaluation come first; decisions about processes and methods defining quality instruction should follow, for they depend to some extent on the former.

There is currently a national discussion regarding desired outcomes for successful adulthood in the 21st century[1] (e.g., Huitt, 1997; Partnership for 21st Century Skills, 2003; Secretary's Commission on Achieving Necessary Skills, 1991). However, at this time the most widely used measures of student learning are standardized tests of basic skills (Bolon, 2000). When these outcome measures are used, direct or explicit instruction models most often produce the highest

1. *Editors' note: Desired outcomes would constitute curriculum theory, and they are addressed in the content layer of instructional design.*

student scores (Rosenshine, 1995) and, therefore, educators should give them consideration when designing instruction.

This chapter provides an overview of the direct instruction approach and is divided into three sections: (1) an introduction to general research-based design attributes of quality instruction; (2) a general model of direct instruction a teacher could utilize to create direct instruction lessons; and (3) an explanation of the design attributes used for the development of scripted lesson plans. Thus, the chapter describes a number of methods or principles, both general and specific, for the application of direct instruction in different instructional situations.

General Design Attributes

Given the importance of student learning and achievement, instructional-event theory requires serious analysis, consideration, and reflection. In volume 2 of this book, Reigeluth (1999) took the position that instructional-event theories (1) should improve learning and development; (2) should inform the practitioner which methods of instruction (and there may be competing or complementary ones) to employ to achieve specific outcomes in specific situations (i.e., an instructional method *designed* to prepare students to score high on an achievement test may not be the best method to help them learn to run and evaluate an experiment); and (3) only increase the likelihood (though to high levels) that the desired outcomes will occur rather than guaranteeing them for all learners and situations.

Reigeluth (1999; chapter 1 this volume) identified three criteria to evaluate how well a method works in achieving instructional outcomes: effectiveness, efficiency, and appeal.[2] Effectiveness requires that appropriate indicators of learning (such as specific levels of achievement and fluency) be identified to objectively measure the learning outcomes. Efficiency requires an optimal use of resources, such as time and money, to obtain a desired result. Appeal is the degree to which learners enjoy the instruction, and it can be especially effective in motivating students to stay engaged and on task (Perkins, 1992). Some educators, especially those espousing a child-centered approach, suggest this last criterion should take precedence over the other two. However, this is problematic in that the academically relevant content public schools must cover as part of their charge can require copious time and effort on the part of many students. As a result, *immediate* satisfaction and enjoyment of the instruction may be difficult to attain. However, if several methods produce equally effective and efficient results, one should employ the approach learners like most. For example, Martin (1999) found that individual written exercises produced similar levels of effectiveness and efficiency as did analogous cooperative learning activities, but the latter were overwhelmingly preferred by the students. In such cases one should opt to use the instructional methods that students prefer.

2. *Editors' note: These are now called "values about priorities" (see chapter 1).*

The design attributes of a direct instruction model described in the following section have their roots in classroom research in the 1950s and 1960s. This research, supported by newly developed techniques for applying systematic observation to classroom practices (Flanders, 1970) and reviewed by Carroll (1963), led to the development of new ideas about school learning. The types of studies using this approach came to be known as process-product studies (Gage, 1978, 1994) because they directly connected classroom and school process variables with measures of student learning. Findings from these studies were summarized in a number of models of effective classroom practice (Cruickshank, 1985; Proctor, 1984; Squires, Huitt, & Segars, 1983).

Logically, a primary purpose of providing quality instruction is for students to successfully complete both classroom academic tasks assigned by the teacher and external audits of classroom learning completed through standardized testing (Darling-Hammond, 2000). However, it should be emphasized that most models of quality instruction do not purport that quality instruction, by itself, always leads to student success. Rather, in addition to the specification of how instructional lessons should be planned and implemented, most approaches to instruction advocate additional activities such as curriculum alignment, correct placement of the student within the curriculum, and classroom management.

A basic principle of curriculum alignment[3] is that lesson planning must be directed toward objectives measured on an appropriate achievement instrument (Cohen, 1995). Brady, Clinton, Sweeney, Peterson, and Poynor (1977), as well as Cooley and Leinhart (1980), reported that, on average, objectives covered in textbooks and objectives covered by standardized tests overlap between 40% and 60%. Taking the time to make sure that content overlap occurs is vital, because alignment of a school district's curriculum with objectives assessed by standardized tests can explain up to two-thirds of variance among scores (Wishnick, as cited in Cohen, 1995). Additionally, the curriculum should be constructed using task analyses that identify the prerequisites for all learning objectives (Gagné, Briggs, & Wager, 1992) and should provide opportunities for students to revisit previously covered objectives as they move through the curriculum (called a spiral curriculum, Bruner, 1990).

The principle of student placement[4] emphasizes that students must be properly placed within the curriculum. Quite often this means that students have been grouped based on a pretest of prerequisite skills. The grouping of students is typically accomplished by either a between-classes or within-class procedure. The between-classes grouping would be made prior to beginning the instruction process with the goal of having the students in a classroom be fairly homogeneous with regards to their prerequisite skills in an area. The within-class grouping would permit the teacher to adjust instruction to best address students' current

3. *Editors' note: This principle lies at the interrelationship between Curriculum, Assessment, and Instruction.*
4. *Editors' note: This principle is a part of curriculum theory, for it determines what content the student is taught, and it is addressed in the content layer of instructional design.*

knowledge and skills without stigmatizing them or placing students in permanent groups that are not adjusted as the students' knowledge and skills change.

Planning and implementing a long-term, solution-oriented, classroom management program is another effective classroom practice and one of the most effective means of increasing students' time-on-task or engaged time, an important predictor of students' academic achievement (Berliner, 1990; Brophy, 1983; Brophy & Good, 1986).

Combined, these three measures of student classroom behavior (student success on classroom assignments, student coverage of content objectives that will be tested, and student time-on-task) result in the measure called academic learning time (ALT) (Berliner, 1990; Squires et al., 1983). Academic learning time is defined as the amount of time students are successfully involved with important and meaningful content, especially content that will be tested through external audits of the schooling process, such as standardized achievement tests. It is a combined measure of both the quantity of time (time-on-task) as well as the quality of time (success and content overlap) that students accumulate in the classroom. It is the acquisition of ALT (that is, large quantities of quality time) that should be the central focus of teachers and students during the relatively short period they spend in the formal learning environment.

A General Model of Direct Instruction

Several popular models of instruction were developed using the process-product research findings discussed above (e.g., Gagné et al., 1992; Good & Grouws, 1979; Hunter, 1982; Rosenshine & Stevens, 1986; Slavin, 1986). Rosenshine (1995) provided an updated version of this approach and showed how the latest research from cognitive psychology could be incorporated in a direct instruction model.

One general condition included in all these models, identified by Carroll (1963) and elaborated by Bloom (1976), is that students come to the learning task with different levels of prerequisite skills and varying capacities for learning academic material. Therefore, selection of academic objectives[5] and methods of instruction must be adapted to the background and skills of students (Walberg, 1999), and additional learning time must be provided to slower students for all students to attain mastery on curriculum objectives[6] (Guskey & Gates, 1986; Guskey & Pigott, 1988). As much as possible, student attainment of prerequisites should be assured and instruction provided only for those students who have demonstrated mastery on them.

Another general attribute included in all direct instruction models is that essential content should be taught to students via an active presentation of in-

5. *Editors' note: Deciding what to teach is a matter of Curriculum Theory and is addressed in the content layer of instructional design.*
6. *Editors' note: Mastery of objectives or standards is incompatible with the industrial-age paradigm of education, which is designed to sort students (see chapter 1).*

formation[7] (Rosenshine, 1995). Fisher et al. (1978) stated that teacher-directed instruction should occur for more than 50% of a lesson and seatwork should occur less than 50%. Bloom (1981) stated that teachers should provide a clear organization of the presentation with a step-by-step progression from subtopic to subtopic based on prerequisite knowledge and skills. This is discussed in more detail in the presentation phase below.

Additional research-based attributes of direct instruction include: (1) pretesting or prompting of relevant knowledge (Block, 1971); (2) more student-teacher interaction (Walberg, 1991); (3) the use of many examples, visual prompts, and demonstrations to mediate between concrete and abstract concepts[8] (Gage & Berliner, 1998); and (4) a constant assessment of student understanding before, during, and after the lesson (Brophy & Good, 1986).[9] Each of these suggestions is included in the description below.

The following is a description of the specific methods of instruction advocated in the general model of direct instruction. It is labeled a transactional model because it emphasizes teacher/student interaction at each point in the lesson (Huitt, 1996). This model proposes four categories of methods of instruction: (A) a presentation phase; (B) a practice phase; (C) a summative assessment and evaluation phase; and (D) methods dealing with monitoring students and giving them feedback.[10] The presentation, practice, and assessment/evaluation phases are done in a somewhat linear fashion, with monitoring (which might be considered formative assessments) and feedback occurring throughout the three phases (see Figure 5.1). Within each of the four major categories there are important instructional methods that increase the likelihood that the learner will successfully learn new concepts and skills.

A. The Presentation Phase

There are five important instructional methods that should be used during the presentation phase of direct instruction: (1) review of previous material or prerequisite skills;[11] (2) a statement of the specific knowledge or skills to be learned; (3) a statement or experience that provides students with a reason or explanation of why these particular objectives are important; (4) a clear, active explanation of the knowledge or skills to be learned; and (5) multiple opportunities for students to demonstrate their initial understandings in response to teacher probes.[11]

7. *Editors' note: This is an instructional method, and hence a part of instructional-event theory and is addressed in the strategy layer of instructional design. This method (like the others in this general model) is on the universal end of generality within this galaxy of methods, and it is therefore a relatively imprecise part of the model.*
8. *Editors' note: This fits Merrill's Demonstration Principle.*
9. *Editors' note: (a), (b), and (d) are parts of instructional-event theory, and (c) is part of instructional-evaluation theory.*
10. *Editors' note: These are parts of the instructional theory that provide more precision to the description of the theory.*
11. *Editors' note: These are parts of the first part. They are all in the strategy layer of instructional design. The fifth one could be used for assessment purposes, as well as for instructional purposes, representing the kind of integration of teaching and testing that is an integral part of the Information-Age paradigm of education. The fifth one also fits Merrill's Application Principle.*
12. *Editors' note: Merrill's Activation Principle.*

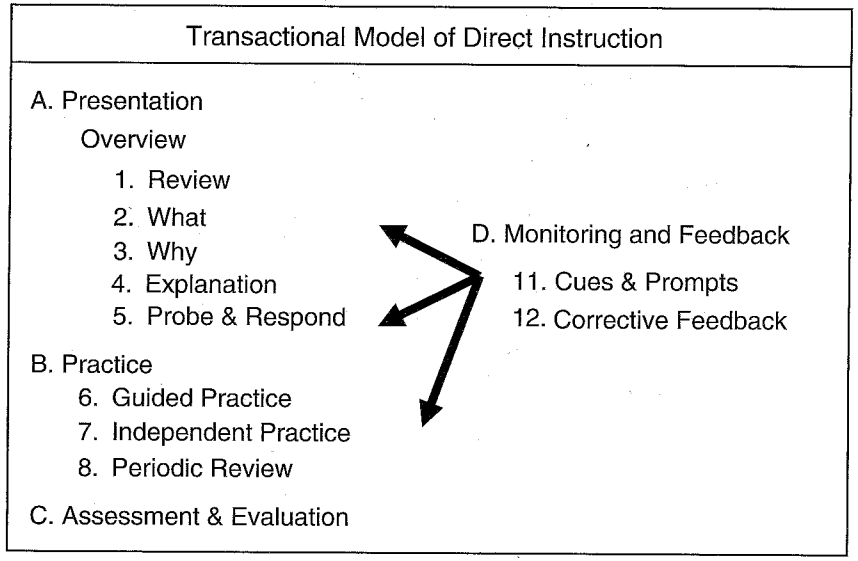

Figure 5.1 Transactional Model of Direct Instruction

An important instructional implication from cognitive psychology is that learning is made more meaningful if the presentation is preceded by an advance organizer (Ausubel, 1960). While Ausubel referred to an advance organizer as information at a higher level of abstraction than the material to be learned, the term has come to refer to activities that link or bridge new information to existing cognitive structures (Mayer, 2002). The first three universal methods of the general model of direct instruction discussed in this chapter provide this orientation to the lesson in that they provide a rich structure or framework within which instruction will take place.[12] While the three methods are listed in an order, there is no logical or empirical evidence that suggests this particular order. Rather there are legitimate reasons why an instructional designer or teacher might want to switch the order. However, it is vital that these three methods occur before the explanation of new concepts begins.

1. Review. In the first method, teachers and students go over previously learned knowledge or skills that are relevant or prerequisite to the new learning that is to take place. Teachers could have students check homework or discuss difficult material from the previous day's lesson (Walberg, 1999). Teachers could also create an activity that has students utilize concepts and skills that have been previously learned. It is important that students activate prior knowledge so that

they can more easily establish links to new information (called elaboration by information processing theorists such as Craik & Lockhart, 1972).

2. What. In the second method, teachers describe what is to be learned in the lesson. Teachers state the objectives and how the student is to be held accountable for the learning activity (Gronlund, 2003; Mager, 1997). Perkins (1992) maintains that clarity of content is one of the most important conditions for quality instruction. This clarity should include what is to be learned and the standards for mastery. For more performance-based outcomes, Gibbons, Bunderson, Olsen, and Robertson (1995) suggest that "work models" demonstrating the expected processes or operations provide additional clarity as to what the student should be able to do at the end of the learning process.[13] The lesson plans utilizing the design principles of direct instruction (for which URLs are provided later in the chapter) might be considered more in the nature of work models described by these authors. A similar approach, advocated by McCarthy (2000) in her 4MAT model, has the teacher first provide students with direct experiences and then help them organize those experiences into concepts.

The most important aspect of the "what" method is that students should be informed as explicitly as possible what they should be able to do at the end of the learning process. There are two types of objectives[14] teachers can include in this method. The first are activity objectives: These state what the teacher and students will be doing in the present lesson and serve as an organizer for the lesson's or unit's activities. They are also statements about how the teacher will monitor student performance for formative evaluation purposes. For example, the teacher might say, "Today we are going to begin reading Shakespeare's *Taming of the Shrew*." The second are terminal objectives stating what the student will be able to demonstrate at the end of instruction on summative assessments. These will generally be written and will specify what the student will know or be able to do, as well as how learning will be assessed and the standards that must be met. There may be several lessons that will prepare students for the knowledge or skills that will be summatively evaluated, and students should be informed of how multiple lessons tie together.

3. Why. In the third method, teachers describe why a particular objective is important for students to master. The teacher might have students engage in an activity that could be done more efficiently once the new content or skills have been mastered. The teacher might also lead a discussion of tasks[15] performed in other classes or subject areas that are relevant to the new learning. Ultimately, it is important that students have a personal reason to be engaged in the learning process. McCarthy (2000) stated that as many as 40% of students in normal K-12

13. *Editors' note: Merrill's Demonstration Principle.*
14. *Editors' note: These provide more precision in the description of the methods by identifying kinds. However, it is possible that both kinds may be recommended by the theory, in which case they are also parts. So there is an area where the difference between parts and kinds blurs. If they were just kinds, it would be important to provide guidance as to when each kind should be used in preference over the other, which is a situationality.*
15. *Editors' note: This begins to address Merrill's Task-Centered Principle.*

classrooms have a learning style that demands a satisfactory answer to "Why should I be involved," before they will engage in a learning task. These students are overrepresented in remedial and special education classes, perhaps because traditional instruction does not successfully address this issue in a personally meaningful way.

4. Explanation. The fourth method is the active, careful explanation to students of the content or skill to be learned. An important principle guiding this method is that the teacher should move from subtopic to subtopic in an efficient manner, introducing new material in small portions and connecting each new subtopic to the previous one (Bloom, 1981; Walberg, 1999). One of the most important considerations is to sequence the presentation such that the organization is clear and obvious to students. Researchers have identified a number of organizations that might be used:

a. Component relationships—the lesson could be organized from parts to whole (inductive) or from whole to parts (deductive).[16] For example, this current discussion of direct instruction could be organized inductively from a discussion of specific activities that should be incorporated into a lesson to an overall description of the lesson, or by using a more deductive approach through a description of the lesson followed by ever-increasing detail regarding the parts. Other K-12 content examples where a teacher could organize lessons either inductively or deductively include presentations on the major systems of the human body or instruction on the different categories of literature. In general, while there are no definitive rules as to when a teacher should opt for one organization over the other, research does suggest a rule-example-rule approach is an effective means to teach concepts to students (Van Patten, Chao, & Reigeluth, 1986).
b. Relevance relationships—Quite often this type of organization is based on a logical or empirical relationship among factors or categories within the lesson that are not hierarchically organized. For example, in a middle school language arts classroom, the teacher could explain the different types of writing (i.e., expository, narrative, and persuasive) based on the associations between the writing methods and the appropriateness of the usage of different types of writing for a given situation. A teacher or curriculum designer may opt to use relevance as a means to organize lessons when the content that is being learned is organized in categories that are not hierarchical.[17]
c. Sequential relationships—the lesson could be organized in terms of a step-by-step sequence. For example, how to repair an appliance or how

16. *Editors' note: These are kinds of sequences—alternatives to choose from.*
17. *Editors' note: Here is a situationality for deciding when to use this type of relationship to sequence the instruction.*

to administer an injection could be organized in terms of the actions that would be made in a specific order.

d. Transitional relationships—the lesson could be organized in terms of the movement or transformation from one phase or stage to another in the content being taught; oftentimes these changes go beyond a simple sequence of steps and imply a qualitative change. Presentations on Piaget's stages of cognitive development, biological evolution, or historical sociocultural trends would be examples of this type of qualitative change.

Additionally, teachers should use many examples, visual aids (e.g., concept maps and flow charts), and demonstrations in their presentation to enhance the effectiveness and efficiency of instruction (Gage & Berliner, 1998; Walberg, 1999).

5. Probe and respond. In the fifth method, teachers probe the students regarding their initial understandings.[18] These are formative assessment activities and should be quick, short explorations of student knowledge or skills that inform the teacher if students are acquiring the concepts being presented. Two important issues related to questioning should be considered. First, Gage and Berliner (1998) suggested that teachers should ask more lower-level (knowledge and comprehension) questions (80 to 90%) in elementary grades. Teachers in the middle and upper grades should ask relatively higher-level questions that require students to actively process information (Walberg, 1986). Second, teachers need to make instructionally effective use of wait-time, defined as the interval between a teacher probe and student response (Wait-time I) or the interval between the student response and the teacher response (Wait-time II). Rowe (1974a, 1974b) found that increasing either led to increased achievement, with increases in both having a compound effect. Moreover, Fagan, Hassler, and Szabo (1981) found that using both higher-order questions and increased wait-time had greater impact than using either separately.

B. The Practice Phase

As shown in Figure 5.1, there are three methods of instruction in the practice phase of the direct instruction model: (6) guided practice under the teacher's direct and immediate supervision, (7) independent practice where the student is working on his or her own, and (8) periodic review (often incorporated daily in guided and independent practice) whereby students are utilizing previously learned content or skills.[19] Perkins (1992) suggested that providing learners with

18. *Editors' note: This fits Merrill's Application Principle, but with integration of teaching and testing (assessment).*

19. *Editors' note: These also all fit Merrill's Application Principle. While these are all kinds of practice, they are also parts of the instructional theory because they should all be used. If you had to choose just one of them for any given piece of instruction, they would just be kinds (not parts).*

numerous opportunities to practice the skills being learned is a critical activity for student learning.

6. Guided practice. In the sixth method, students practice the newly learned knowledge or skills under the teacher's direct supervision (Walberg, 1999). Students could engage in such activities as practicing reading to each other in small groups, solving a few math problems, writing a short outline of important points covered in the teacher's presentation, or comparing and contrasting two historical events or two species of animals. Students could work by themselves, in pairs, or in small groups. At this point in the lesson, the teacher must actively monitor student activity while providing immediate feedback. At the end of this method, teachers should have rather precise information regarding each student's knowledge or skill with respect to the lesson objective(s).

7. Independent practice. In the seventh method, students practice the new concepts independently. This may be done in the classroom or at home. While there has been some research that homework is relatively less important for elementary students (Cooper, Jackson, Nye, & Lindsay, 2001), the vast majority of research supports the positive effects of homework for middle grade and high school students (Walberg, 2003; Walberg, Paschal, & Weinstein, 1985). Most importantly, homework must be completed and graded if it is to be effective (Cooper, Lindsay, Nye, & Greathouse, 1998; Walberg, 1999). It seems obvious that if the instructional day can be increased, thereby giving students more engaged time (Berliner, 1990), then student achievement will increase. However, if students do not have the supportive home environment that leads to successful homework completion, the school needs to provide additional time after school to complete homework in a supervised environment.

8. Periodic review. In the eighth method, which can be incorporated into teacher probes, guided practice, and independent practice, students connect with and practice material they have already learned. Research done more than 60 years ago detailed the benefits of distributed practice (Hull, 1943). In fact, Saxon (1982) made this principle one of the hallmarks of his successful approach to mathematics instruction (Klingele & Reed, 1984). Based on classroom observations of practicing teachers, this method and providing an overview before beginning an explanation are two of the most often omitted. Teachers would be well served, when designing instruction, to make sure students have opportunities to revisit material learned a week, a month, or even a year previously.[20] While cognitive research has shown that once material is in long-term memory it is there permanently (Atkinson & Shiffrin, 1968), students need practice retrieving that information and using it appropriately. This is an excellent place in the lesson to use cooperative learning techniques (Johnson & Johnson, 1998; Slavin, 1994). Students can be assigned tasks or problems that incorporate both recently and previously covered content and skills. Students should have to remember previous material and make decisions as to its appropriate use for a particular problem or situation.

20. *Editors' note: This may partially address Merrill's Integration Principle.*

C. The Assessment and Evaluation Phase

There are two instructional methods in the assessment and evaluation phase of the transactional direct instruction model (see Figure 5.1): (9) daily reflection on formative data collected during and at the end of the lesson, and (10) collecting summative data over longer intervals such as weekly, biweekly, and monthly. It is important to clarify that phase C (assessment and evaluation) involves collecting data and making decisions about end-of-lesson or end-of-unit assessments, whereas phase D (monitoring and feedback) occurs throughout the lesson and involves collecting data and making necessary clarifications or providing additional instruction.

9. Formative assessment. In the ninth method, teachers make formative evaluation decisions about students on a daily basis to determine if they are making progress. Data from the previous methods of probing and responding, guided and independent practice, and periodic review activities might be used. Alternately, teachers may decide to give quizzes to gather additional information if they are uncertain about the learning of the group or of particular individuals.[21] The primary function of this evaluation process is to make plans for additional teaching on the topic, if necessary. Walberg (1999) asserts that additional teaching should occur when students perform at less than a 90% level during guided and independent practice exercises.

10. Summative assessment. In the 10th method, teachers gather summative assessment data to see if students have mastered the required concepts and skills. This usually is in the form of unit tests or projects covering material from a week or two of instruction. Other types of summative evaluation may include semester or annual exams. It is important that summative evaluations match the content, form, and standards of external audits of classroom learning. Teachers should know the expectations of standardized tests, the requirements of any related courses students might take in the future, expectations of learning requirements at the next level of schooling, and requirements for future employment. Not every summative evaluation must take all of these into consideration, but students and parents have every right to expect that teachers' summative evaluations of students' classroom performance are related to judgments that will be made by others.

D. Monitoring and Feedback

There are two important instructional methods that should occur throughout the lesson on an "as needed" basis (see Figure 5.1): (11) providing cues and prompts, and (12) providing corrective feedback and reinforcement.

11. Cues and prompts. Method 11, providing cues and prompts, is often used when teachers review previous material, ask questions or probes, or have students

21. *Editors' note: Here we see alternatives to choose from, so this is elaboration through identifying kinds of a method. Of course, situationalities should be offered to help a practitioner decide when to use each kind.*

engage in guided practice. The use of cues to hint at important information or indicate lesson transitions and the use of prompts when having students demonstrate the initial understandings or during guided practice are important instructional activities (Doenau, 1987). When a student is in what Vygotsky (1978) called the Zone of Proximal Development, the student will sometimes need a cue or prompt in order to be able to recall the required information or demonstrate the desired skill. However, when no amount of prompting evokes the desired response,[22] further instruction is indicated. This assistance or further instruction should take place through a process of scaffolding whereby the teacher models the learning task or activity and then carefully and systematically relinquishes more and more responsibility to the student to perform it (Moll, 1992).

12. Corrective feedback. Finally, the 12th method, providing corrective feedback and reinforcement, is done whenever the teacher has made an assessment of student learning at any point in the lesson. Perkins (1992) suggested that corrective feedback is one of the most important instructional activities provided during instruction. Walberg (1986), in his meta-analysis of research on teaching, found that providing corrective feedback and reinforcement showed the strongest relationship to student achievement of any of the single teacher action studied. Feedback should be provided for both correct and incorrect responses. An important principle is that students should not only hear or see the correct answers; they should also know why a particular answer is correct or incorrect. For example, when conducting probes, the teacher could ask a student a question and then ask another student if the first student's answer was correct or incorrect and why. The teacher could do the same type of activity when reviewing homework or other independent practice activities. Additionally, when going over a multiple choice test, the teacher could select questions with which many students have difficulty and go over each of the possible answers, having students tell her whether that answer is correct or incorrect and why.[23] Dihoff, Brosvic, Epstein, and Cook (2004) showed that immediate feedback is superior to delayed feedback and the teacher should strive to provide feedback as quickly as possible.

The relationship of reinforcement during instruction to academic achievement has been one of the most consistent findings in process-product research (Brophy & Good, 1986; Rosenshine, 1995; Walberg & Paik, 2000). The most common form of such reinforcement is teacher attention: a nod, a smile, or a quick comment. Cheery notes on the assignment or stickers can also be used effectively. Making a practice of sending a positive note home to parents or caregivers for at least one student in each subject area or class period is an excellent way to provide reinforcement for quality work.

In summary, a general model of direct instruction has teachers actively present new content or skills to students, covering small amounts of material

22. *Editors' note: This is a situationality.*

23. *Editors' note: Here we see that "examples" of a principle often represent "kinds" of a method that provide more precision about the method (or principle).*

in an organized, step-by-step manner, having them practice that, and providing corrective feedback and reinforcement continuously throughout the lesson. Summative evaluations match the content, form, and standards of those who will audit classroom learning, thereby facilitating the student's movement from the classroom to successful adulthood.

Direct Instruction and Scripted Lessons

In the previous section of this chapter, the universal methods of the general model of direct instruction were presented. This section describes a scripted lesson approach to designing instruction that utilizes the term *Direct Instruction* as a proper noun and is often referred to in the literature as DI (e.g., K. Engelmann, 2004). The methods of instruction for scripted lessons are the same as in the general model, but differ in terms of the specificity of teacher statements and student responses. Scripted lessons present smaller amounts of new information and skill training in each lesson, often accounting for only 10 to 15% of the total lesson (S. Engelmann, 1999). The remainder of the lesson firms and reviews content presented in earlier lessons. As in the general model, a scripted lesson approach assumes that nothing is completely taught in a single lesson. Instead, new content is presented in parts of two or three consecutive lessons to provide students with enough exposure so they are able to use it in applications. Each lesson presents content that is new today; content that is being firmed, having been presented in the last two or three lessons; and content that was presented even earlier in the sequence and is assumed to be thoroughly mastered.[24] This content often takes the form of problems or applications that require earlier-taught content (S. Engelmann, 1999). Thus, scripted lesson approaches could potentially utilize more allocated class time than other approaches to address learning objectives.

While a scripted lesson approach was originally developed as a method to help predominately impoverished children who were not academically successful in traditional public school programs, it has been shown to be effective and efficient with both low and high performing students (Adams & Engelmann, 1996). In Project Follow Through, this scripted-lesson approach was compared to eight other models of instruction (including traditional and constructivist approaches and a home-based model) on outcome measures of three dimensions: academic basic skills, cognition, and affect (Stallings & Kaskowitz, 1974). The scripted-lesson approach produced the highest average performance of any program in all three dimensions (Watkins, 1988). In an analysis of Project Follow Through, Watkins (1988) found that there was an increased emphasis on mastery of content and skill prerequisites for additional lessons for *all* students. The analysis also indicated that a high degree of student success helped raise students' self-efficacy and, indirectly, improved the students' satisfaction with their schooling.

24. *Editors' note: This is part of the content layer of instructional design.*

Even though scripting is an effective form of instruction that efficiently increases achievement and helps lower-performing students to catch up with their peers, it is not a panacea for eliminating low achievement. Comparison studies (Rosenshine, 2002) showed that, when implemented with fidelity, programs using scripted lessons produced achievement gains, but these gains were not always sustained when the use of scripted lessons was discontinued. To help sustain achievement gains, many schools combine scripting with other methods, especially in the areas of reading and math.

One explanation for the achievement gains made when teachers used a scripted lesson approach is that there is an explicitness in scripted lessons that reduces the guesswork required on the part of the student as to what is expected to demonstrate mastery. Too often traditional curricular materials and instruction require the student to *figure out* what is important (Hummel, Venn, & Gunter, 2004). Even well designed lessons might present too much material or require students to make connections for which they are ill prepared. Gersten, Taylor, and Graves (1999) assert that an emphasis on detail sets a scripted lesson approach apart from the general model.

The scripted lesson approach shares many similarities with the general model of direct instruction. Scripted lessons begin with outcome behaviors being identified and then aligned with national and state curricular standards. The responsibility for this identification and alignment rests with the party (the individual teacher, a group of teachers, or a commercially available program) who generated the scripted lesson(s). These identified and aligned outcomes are then thoroughly "task analyzed." This involves breaking the complex skill or concept specified in the outcome into its component parts so that every student in a particular track has the background skills and knowledge to learn the new skills and content. The scripted lesson approach differs from the general model in that: (1) the scripted lesson approach often involves a more detailed analysis, producing smaller steps in the task analysis than might be used in the general model; and (2) in scripted lessons, the exact wording the teacher and student use is written down.

There are several additional design elements that tend to be associated with successful use of scripted lessons. Scripted content follows an "answer→question→response" format. A piece of content is presented to the students. The teacher then asks a question about the piece of content just presented. Immediately after the question, a signal (a visual hand drop or an auditory prompt such as a thumb snap) is given, and the students chorally respond to the question. The vast majority of scripted lessons use chorally answered questions rather than questions directed toward individuals. The ratio of choral to individual questions is about 10:1.

If at least 95% of the students answer the question correctly and at the same time, the teacher will usually do a "firm-up" by saying yes, good, etc., followed by the answer to the question. (Repeating the answer the students gave is favored

over just using general verbal praise (i.e., "Good job"), because such praise is often, by itself, ineffective.) The teacher follows with a correction procedure when (1) fewer than 95% respond; (2) the students do not respond together as a group; or (3) when the answer given is incorrect.[25]

Corrections are never punitive. If fewer than 95% respond, the teacher simply says, "I need everyone to participate," then restates the question and gives the signal again. If the students do not answer together, the teacher would say something like: "I need everyone to answer together immediately after the signal. Let's try it again." The teacher would then restate the question and give the signal. When an incorrect answer is made, the teacher, in most cases, simply states the correct answer and says, "Let's do it again. My turn." The teacher would then present the same piece of information followed by the same question and signal.

Immediately following the delivery of a script, students complete assignments over the lesson, though these assignments also review related content from previous lessons. Such practice is critical to students mastering the content, and includes work done both individually and in small groups.

Many teachers initially have difficulty with scripting because of their previous experiences. Too often in teacher-made scripts, as in other methods of instruction, the teacher covers the content only one time. This is usually insufficient for any type of lesson. In and across lessons the teacher must give students frequent opportunities to be actively engaged with new content and reviews of previously covered material. The pace of the teacher-delivered script is fast, therefore tiring to both instructor and students. The actual presentation of the script itself should take no more than 20 minutes. The remainder of the class period is spent on practice activities designed to help students master content, or assessment activities to determine what they have learned. Students can do practice or assessment activities individually or in cooperative learning groups. Once students demonstrate proficiency on these activities, they should immediately have a graded individual assessment. Independent practice work, especially work done outside the classroom, should be similar in structure to these classroom-based activities. Each completed lesson (i.e., after covering all the objectives) should be followed by a summative quiz or test.

An example of a scripted lesson covering the four types of sentences (i.e., declarative, exclamatory, imperative, and interrogative) is available at http://chiron.valdosta.edu/whuitt/edpsyc/DI_lp_sentences.doc.

Notice that it begins with an advance organizer (Ausubel, 1978; Walberg, 1999), and the day's objectives are communicated and explained. Next, a few minutes are spent reviewing the prerequisites to the day's lesson (often, checking homework is part of the review). Then the day's script is delivered. The script is followed by the informal activity (a written exercise usually). Based on how well the students perform, the teacher may do another such activity, or a formal assessment (seatwork, a quiz, or homework if it is close to the end of the period).

25. *Editors' note: These are three situationalities for using the correction procedure.*

http://chiron.valdosta.edu/whuitt/edpsyc/lpexam3.html shows the same lesson using the methods of instruction for the general model of direct instruction discussed above.

A significant advantage in training teachers to use the design elements of scripted lessons is that there are commercially available materials that teachers can use in the training process. When teachers are properly trained and coached using these materials, many teachers state that they begin using more of the scripted-lesson principles (small pieces, signaled choral responding) in their classes and begin to develop and use their own scripted lessons (Hummel et al., 2004).

Deciding when and if a scripted-lesson approach is appropriate is as important as deciding when to use direct instruction itself. Content and skills that represent chained behaviors, such as the steps one follows to solve a math word problem or any other academic activity that has specific steps, are likely candidates for scripted lessons.[26] Another factor that helps a teacher determine whether scripting might be useful is the attributes of students. If the content or skill is so fundamental to future academic learning that it must be mastered by all students, when students are not keeping pace with grade-level requirements, or if there is a concern that a significant number of students has not mastered the prerequisites for a new lesson, a scripted-lesson approach should be employed. Because these circumstances occur in every classroom, all teachers should, as part of their teaching repertoire, possess expertise in scripting.

Scripted lessons, like any lesson, do not have to be limited to only those skills requiring students to perform at the lower levels of the Bloom, Engelhart, Furst, Hill, and Krathwohl (1956) taxonomy of cognitive objectives. Through careful planning, scripts can be developed that also teach students how to analyze and evaluate, skills typically associated with problem solving. Scripted lessons have been developed in all subjects to reflect *big* ideas, defined as:

> ...highly selected concepts, principles, rules, strategies, or heuristics that facilitate the most efficient and broadest acquisition of knowledge. Big ideas serve to link several different little ideas together within a domain such as science, reading, math, or social studies. They are the keys that unlock a content area for a broad range of diverse learners and are best demonstrated through examples instead of definitions. (Kame'enui, Carnine, Dixon, Simmons, & Coyne, 2002, p. 9)

Summary and Conclusions

While there has been some criticism of the research methodology on which direct instruction is based (Garrison & MacMillan, 1994), especially the atheoretical nature of the results from process-product research, the general guidelines,

26. *Editors' note: Here is a situationality for use of the Scripted Lessons variation of Direct Instruction. Another one follows.*

the general model, and the scripted lesson approach to direct instruction have demonstrated their effectiveness in today's classrooms. And rather than an atheoretical approach to instruction, direct instruction is actually an eclectic approach using principles from four of the major learning theories associated with the study of classroom learning. The influence of operant conditioning and behavior analysis, we think, is obvious, based on the advocacy of stating explicit, observable objectives, breaking down learning into small steps, and correcting and reinforcing mastery of each step. The influence of information processing and cognitive learning theory is seen in the use of advance organizers, the connection of new learning to prior learning, use of higher-order questioning, and the advocacy of having students engage in elaboration activities. Other theories of learning have also contributed principles that can be easily implemented in direct instruction. For example, principles advocated in facilitative teaching (a humanistic approach to education), such as responding to students' feelings and smiling at students, can be implemented throughout a lesson (Asby & Roebuck, 1977). Components of a social cognitive approach, such as cooperative learning (Johnson & Johnson, 1998; Slavin, 1994), can be readily implemented in the guided practice method of instruction.

S. Engelmann (1999) views effective instruction within a specified curriculum as a stairway. Each step of the stairway presents new content and skills for which the student already has the prerequisites. The teacher directs the learning activities associated with that level, and students acquire mastery of those skills. Each new step or lesson takes the student about the same amount of time and effort to master the associated content. While higher steps (i.e., later lessons) represent more complex content, from the student's perspective they are not viewed as more difficult because they have already acquired the lesson's prerequisites.

Today, academic achievement is primarily evaluated through standardized tests of basic skills. Critics of standardized testing object that explicitly teaching the objectives measured by the standardized test narrows the curriculum (Kohn, 2001). Yet that is exactly what must be done if we expect all students to cover and demonstrate mastery on an explicit body of knowledge in a specified amount of time. If our society changes the measures of school learning so that assessments are made of a student's ability to inquire (Minstrell & van Zee, 2000) or demonstrate higher-level or critical thinking (Kuhn, 1999; Oxman, 1992) or produce products that would demonstrate their disciplined minds (Gardner, 1999a, 1999b), then it is entirely appropriate to suggest approaches to instruction that will accomplish those tasks. However, direct or explicit instruction is most often the selected approach to designing and implementing quality instruction when students are expected to master a broad spectrum of knowledge and skills as advocated by Hirsch (1996) or evaluated by standardized tests, as it is a very efficient way to manage the scarce resources of teacher expertise and classroom time.

Even though this chapter has focused on the design attributes of direct instruction, it should not be assumed that all students will demonstrate mastery

of academic content if quality instruction is provided. Carroll (1963) made it clear that because students differ in their capability to learn academic material, educators have two choices. Either all students can be expected to attain an explicitly stated level of mastery, which means educators must allow time-to-learn to vary, or students can all be provided the same time-to-learn, in which case students will attain different levels of mastery. The reality of current education practice is that time-to-learn is held constant for most students (i.e., 180 days, 5 to 6 hours per day). The efficiency of coverage of a breadth of objectives appears to be more highly valued than effectiveness (i.e., having all students demonstrate mastery of core content). This is a major critique of traditional practice leveled by Bloom (1976). Even in schools or districts where students are provided with after-school or Saturday tutoring or opportunities for summer school, these are seldom mandatory, providing the impression that time-in-the-classroom is the important factor, rather than mastery of required content and skills.

In an era of accountability, classroom teachers should be expected to deliver high quality teaching (i.e., planning, management, and instruction). However, students are nested within a family, a school, a neighborhood and community, a culture. People and institutions whose actions contribute to school learning should also be held accountable (Berliner, 2005). Principals need to provide effective leadership (Huitt, 1997), schools need to be sized appropriately (Howley & Howley, 2004; McMillen, 2004), schools and districts need to provide adequate time for all students to master required content and skills (Berliner, 1990; Caldwell, Huitt, & Graeber, 1982), families need to provide a home atmosphere that facilitates school learning (Evan, 2004; Walberg, 1999), state departments need to provide adequate instructional materials for the objectives that will be tested on mandated criterion- and norm-referenced tests (Bracey, 1987), and the federal government needs to adequately fund its mandates for school improvement (Fratt, 2005). These issues should receive an equally high priority to that of encouraging and training classroom teachers to deliver the highest possible quality instruction.

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